

AMMnet Seminar Series: Panel on Running Hands-on Modeling Workshops

March 7, 2023 Notes

Goal: Learn from each other to make upcoming modeling workshops even better, for facilitators and participants!

Panelists

Justice Aheto
U of Ghana

Sam Kiware
IHI, PAMCA

Sheetal Silal
U of Cape Town

Punam Amratia
MAP

Jaline Gerardin
Northwestern U

Justin Millar
PATH

Cara Brook
U of Chicago

Peter Macharia?
Didn't attend
KEMRI

Hilary Topazian
Imperial College

**Susan Rumisha (not a
panelist, but
contributed)**

Moderated by **Ghislaine Ouédraogo-Ametchie** (Northwestern U, PAMCA)

Trainings

Program	Length, Size	Remote	Target	Contents
NU FEP Chicago, IL	16-18 weeks 3-5 ppl	No	Faculty	EMOD Scientific Communication
WHO Prioritization Pilot Accra, Ghana	2 days 12-15 ppl	No	Faculty NMEP Staff	MINT
Intro Spatial Analysis for ID @ ASTMH (pilot) *planning another on VectorAtlas for PAMCA '23	1 day 35 ppl FREE*	No, in-person at ASTMH	Students, post-docs, NMCPs Priority to NMCP and Africans	Capacity strengthening to interpret stratification maps 1. Basic Stream (basic spatial analysis) 2. Advanced Stream (Geostat modeling tool)
Epidemiological modeling	3 weeks		GHS staff,	Geospatial mapping and epi

<p>for PH emergency preparedness and response in Ghana</p>	<p>40 ppl</p> <p>FREE + stipend</p>		<p>biostatistics, epi., health informatics</p> <p>M&E from WHO</p>	<p>modeling support for emergency preparedness to look at inequalities of outcomes over space, using web-based services</p> <p>Making policy decisions with limited resources</p>
<p>E2M2 in Madagascar (annual)</p>	<p>10 days, FREE</p> <p>25-30 students</p> <p>+5 mentors (alums)</p> <p>+5-8 instructors</p>	No	<p>Graduate biology, medical, and PH students</p>	<p>R-based programming and applications to statistical/mechanistic modeling</p> <p>1 year follow up 1-on-1 mentoring program for 5 participants each year (remote)</p>
<p>Strengthening Vector Control Decision Making (@ PAMCA)</p> <p>Repeating as pre-conference event at next PAMCA</p>	<p>3 days, FREE</p> <p>29 ppl</p>	No, in-person at PAMCA	<p>Decision-Makers NMCPs</p>	<p>Demystify modeling.</p> <ol style="list-style-type: none"> 1. Challenges to vector control 2. Barriers to good decision making 3. Role of modeling in DM 4. Strategies to approach modeling for non-modelers 5. Create simple tool to support malaria DM
<p>UCT: Intro to Modelling</p> <p>Annual, next in Sept 2023</p>	<p>10 days, ZAR 20,000 ("fairly cheap" - \$1080 USD) w/limited scholarships</p> <p>20ppl</p>	No, UCT	<p>African post-grad students, health researchers, and decision-makers</p>	<p>Introduce the purpose and basic concepts of modeling, simulation, methods, etc.</p> <p>Focus on systemic nature of modeling for policy and decision-making</p>
<p>R Training for Routine Malaria Surveillance and Monitoring</p> <p>More in planning but not currently announced</p>	<p>3-4 days, FREE</p> <p>25-36 ppl</p>	No, in-country	<p>Data analysts at NMCP</p> <p>PATH Staff</p> <p>Other</p>	<p>Capacity strengthening</p> <p>Intro to R</p> <p>Data Use Best Practices (DHIS2)</p> <p>Connection to peers</p>

			in-country partners	
<p>Infectious Disease Modelling with a focus on Malaria</p> <p>(hopefully annual malaria-focused version in The Gambia upcoming)</p> <ul style="list-style-type: none"> - This one is for more senior researchers <p>(also upcoming TB focused workshop)</p>	<p>1 week, FREE w/travel funding</p> <p>23 ppl</p>	<p>No, in Blantyre, Malawi</p>	<p>MLW Grad students</p> <p>Clin. Res. staff</p> <p>Other students.</p> <p>PIH, Ministry of health, other NMCPs</p>	<p>Introduce ID researchers to Math Modeling</p> <ul style="list-style-type: none"> - Transmission dynamics (on paper) - Computer sims - Applying models in practice

Successes

Justice:

- Sent questionnaire to selected participants before start of program
 - Evaluate Spatial / epidemiological modeling skills, etc.
 - Understand background of participants, helpful for preparation
 - Adapted approach to accommodate all levels
- Not allowing individuals to work by themselves
 - Pair participants as low and high background partnership
 - Encourage peer learning
 - Group and team-based work, with deliverables
 - Checking work but also working together to make improvements
 - Arriving at the best solution together
- Workshop with “familiar” feeling and horizontal structure
 - Head-to-head
 - Relaxed discussions, freedom to ask questions
 - No wrong answers - “We all are learning”
- Before workshop, explained to Ghana HS authorities that goal was to provide learning opportunity to those who might not have it, not just those with strongest backgrounds
 - Participants come from across units, not just biostatistics for example
 - Collaborative selection of participants of staff w/GHS helped develop collaboration and lack of hierarchy
 - Selected *cohort* together, not individual participants

Punam:

- Pre and post questionnaires to develop program before and after

- Good to have broad audience at ASTMH - less so for future targeted workshops
- Starting to design mentorship theme with instructors walking around the room
- “Carpentries” - leader at the front of the room with “helpers” around the room for when any given participant gets stuck.
 - Start with the familiar, to build confidence
 - Then move into the new and unfamiliar, which might have a steep learning curve (new software, new disease, etc.)
- Malaria-focused examples align with domain-expertise at MAP
 - Using MAP data/estimates, and other synthetic data sources to mimic routine data
 - Familiarity of participants, trying to minimize learning curves
- Materials have been used by others as well (Amelia at IDM)

Sam: Strengthening Vector Control Decision Making

- +1 Pre-questionnaire
- +1 Peer learning by pairing participants of different levels
- Allow time for pauses to get unstuck and check understanding during workshops
- Do your homework before the workshop! (leaders)
- Simple in-class assignments
 - You can use these kinds of techniques but then let them do the activities on their own
- Emphasize *techniques* and that they could be applied in another programming language (where appropriate)
- What do you think about use of models? Focused on decision-making and how models can contribute more than the nitty gritty of modeling
- Note on program at Dar es Salaam (?) supporting MS program in Math Modeling
 - 1 week training on modeling, data analysis in R
 - Follow-up training visit @ institute on a research project for duration of 2 year master’s program

Longer project-based workshops:

Cara

- +1 pre-program questionnaire/app to select and understand broad audience
- Immersive program
- Teaching mentors (but too much to do both teaching and project during program for the mentors)
 - Using teaching mentorship “round” as a ramp-up to the more research project-based year-long program
- 1-on-1 contracts before collaborations to outline expectations for project ownership, time commitment, etc.
- Remote model - more flexible, but harder to keep energy
- Giving data (internet) credit to participate
- For pairing mentors and mentees in follow-up program
 - Ensure mentee has workable data
 - Lean on on network

Jaline

- Length (16-18 weeks) allows participants to be immersed in learning
- Off-site = freedom from existing responsibilities at home/work
- +1 mentorship
 - Liked super 1:1 nature
- Returning participants as staff
- +1 in person

Hilary

- Range of activities (tech, journal clubs, discussions, etc.) across different aspects of modeling
 - Something for everyone to carry forward

Sheetal:

- Having introductory course open to all backgrounds / disciplines, rather than targeted at students in a particular program or employees in a certain role
- Inspiring people and piquing their interest has led some participants to pursue PhDs in modeling (2/8 students per year!), while others have gentler impact
- Most people leave with *some* impact because they interact with people from other domains (NMCPs, Researchers, Students)

Challenges

- Timing & duration of program (1 day too short!)
- Being remote, but note being in the same time-zone as everyone you know (NU program)

Cara:

- Incentivizing mentors has been difficult as on a volunteer basis (and busy grad students can't work for free)
- Timezones (in remote program)
- time commitment needed for 1-on-1 mentorship
 - Would not pair 2 mentees with 1 mentor

Hilary:

- Too short (1 week) and fast-paced
- Overlap with conflicting Ministry of Health meeting for a few participants
 - Actually led to collab

Sheetal: Managing expectations - "you will not be an expert after 10 days", sensitization not expertise

- Following-up with cohort would be helpful BUT new group every year allows the program to reach and sensitize more people, in more areas
- Would like to do country-targeted programs in Southern Africa to reach more potential modelers
 - Would like to inspire even younger trainees too, but unfortunately in SA a very small % of undergraduates will realistically have the opportunity/\$ to continue education
 - Also challenging to stay in academia post-grad to do this kind of research if not well-funded

- Funding for program itself!

Challenges to setting up more in-country trainings:

Justice: Political, more than logistical.

- Hard to convince people of value if not already bought-in.
- Also hard to convince funders / directors to recruit those with less background or coming from a different perspective.
- When you do it once, and show them the impact, it gets easier.
 - Modelers need to think about how to approach this kind of barrier.
 - Need to have clearly defined objectives for your program to answer to claims that some group “isn’t trainable” or is “irrelevant”
 - Increasing *demand* alongside supply

Sam: maintaining excitement post-workshop

- How do we follow up with participants?
- Online materials available afterward allows for continued engagement, but do participants actually use them? Are they user-friendly? How do we know?

Hilary: Excitement of partner / host institution are critical

- Eagerness to teach, travel, and collaborate worked in this case to get people on board.

Questions

How do we decide who to train?

Samson: Targeted workshops are easier to tackle.

- Different groups need to be trained differently - be thoughtful about reaching broad audiences and how to benefit them (ie undergrads are very different than grad students are different than faculty are different than NMCP, etc)

Punam: Give-and-take between what is being offered and what is desired

- Starts with the work we do, who we’re in communication with, and what strategy comes out of meetings with NMCPs, partners, and others.
- Goal: find key players for the data we work with.
- Eventual vision of bespoke trainings offered to targeted programs

Justin: Critical to get buy-in from *supervisors/leaders* in addition to learners and instructors/organizers, especially for short-term courses with limited in-person presence

- ID and position participants to get continued support from that existing supervisor/leadership structure
 - Often embedded NMCP staff - basically, need to have their boss on board
 - M Mentorship and continued funding to apply their learnings
 - Helps with getting additional resources too

Susan: Choose to train starting with those directly within the program, or those already directly supporting program analysis (if program doesn’t have proper analysts of its own)

- Gaps and training needs reveal themselves as the relationship grows
 - Otherwise, much of a blanket training will be irrelevant

- Essentially stakeholder buy-in and acceptance for the program in codesigning to meet needs
- Try to balance focused training for those outside the program with more skills against generating interest among those inside the program without fewer skills.
 - Can be a gamble sometimes.

How do we get NMCP and other partners to buy-in to training importance?

Justice: ownership of projects, ensure utilization

- Training was initiated by WHO but there was existing relationship with GHS for evaluation of capacity
- From then on collaboration between WHO, GHS, and consultant

Samson: Personal touch can be key to making everyone feel comfortable

How do we follow up?

Justice: Whatsapp group for alumni / participants

- check -in, talk about projects, ask random questions about what they learned to see how they've retained and are utilizing the skills they learned

Punam: Ad-hoc since ASTMH, thinking of other avenues

- Maybe AMMnet can serve as conduit

Conclusions

Cara: Sustained involvement is key

- Annual workshops > one-offs
 - More opportunities and more continuity
 - Increased access in future years, and opportunities to continue instruction
- Broader workshop = More people
- Longer, more intense programs = more thorough, applicable

Jaline: How can some of these programs funnel into others?

- Different programs meet different needs and can be linked, for those who want to learn more / go further
 - 1) Pique interest
 - 2) Build basic skills
 - 3) Become independent modeler
- What relationships need to be built for this to happen? So that trainees aren't "on their own" to find the next opportunity

Punam: Single syllabus is not ideal, and bespoke design would really useful

- Many audiences and targets so bespoke design can be useful

- +1 funneling programs - things can work together to take a short, intro course that can then connect to the longer, deeper dives rather than trying to do it all
 - If most programs start with the basics, we could pool those resources and build out more advanced trainings to fill gaps

Justice:

- Know your audience (individuals and agencies) - tailor to their needs
- Design workshop to include outputs that participants can take back to demonstrate utility to leadership
- Create learning environments conducive to trainees success

Sheetal: Purpose-driven modeling workshops - key.

- Tailor and customize for countries and regions, let it be owned by participants (+1 to justice)
 - Provide something that can be worked/communicated on right away, and is timely
- Let the workshop be owned by participants!
 - Agenda should be set by local expertise where possible

Samson

- Training should align with NMCP needs
- Coordination with other groups and facilitators in other countries
 - You can't do it on your own

Justin

- Let's set up a network of training opportunities across a continuum of topics and levels of depth/expertise
- AMMnet can facilitate

Hilary

- Ditto to all.

Susan

- Train regularly
- Package trainings that are focused
- Advocate for value of the training
- Link with higher learning institutions and introduce touch points like courses